

Mathematics CROSSWALK: 1997 MLR to 2007 MLR	CONTINUITY			WHERE is it found? (Standard, PI, Descriptor)	Is it at the same grade span or grade level?	At what level of Bloom's taxonomy is the COGNITIVE DEMAND in the 1997 MLR?	At what level of Bloom's taxonomy is the COGNITIVE DEMAND in the 2007 MLR?									
	Is it in the 2007 standards?	Is the CONCEPT/ IDEA the same?	Is the WORDING the same?													
	In the coding, PK-2 is represented by (2), 9-D by (9). If no indicator is given the statement is in the standard. If no descriptor(s) is specified then the entire indicator is matched to the expectation. Special attention should be paid to implications of "understand" in the 2007 Mathematics MLR.															
	A. NUMBERS AND NUMBER SENSE															
	Students will understand and demonstrate a sense of what numbers mean and how they are used. Students will be able to:															
ELEMENTARY GRADES Pre-K-2																
1. Demonstrate an understanding of what numbers mean (e.g., that the number 7 stands for a group of objects).	no					2										
2. Understand the many uses of numbers (e.g., prices, recipes, measurement, directions in play).	no					2										
3. Order, compare, read, group, and apply place value concepts to numbers up to 1,000.	partial	no grouping in 2007	no	A1(P)	yes	2, 3	2,3									
4. Determine reasonableness of results when working with quantities.	no, implied	everywhere in "understand"		A	yes	2,3,4,6	2,3,4									
ELEMENTARY GRADES 3-4																
1. Read, compare, order, classify, and explain whole numbers up to one million.	partial	no, classify in 1997	no	A1(3), A1(4), A1(5)	no, goes to grade 5	2,3	2,3,4									
2. Read, compare, order, classify, and explain simple fractions through tenths.	partial	no classify in 2007	no	A3(2), A4(3), A4(4)b	no	2,3	2,3,4									
3. Demonstrate knowledge of the meaning of decimals and integers and an understanding of how they may be used.	yes	yes	no	A5(4)a decimals A6(5)ab integers	no	2	2,3,4; 2,3,									
MIDDLE GRADES 5-8																
1. Use numbers in a variety of equivalent and interchangeable forms (e.g., integer, fraction, decimal, percent, exponential, and scientific notation) in problem-solving.	yes	yes	no	A4(4)b,c; A5(4)d; A5(5)d; A6(5);A2(6);A4(6); A1(7);A4(7)a; A1(8)	no, but mostly	3	2,3,4									

2. Demonstrate understanding of the relationships among the basic arithmetic operations on different types of numbers.	not explicitly	not explicitly, explicit limited to whole numbers	no	D3(3)a	no, earlier	4	3		
3. Apply concepts of ratios, proportions, percents, and number theory (e.g., primes, factors, and multiples) in practical and other mathematical situations.	yes	yes	no	A1(6)ab #theory; A4(6), A3(7), A4(7)	yes, span	3	2,3,4		
4. Represent numerical relationships in graphs, tables, and charts.	yes	yes	no	D3(4),D3(5), D3(6),	no	3	2,3,4		
SECONDARY GRADES									
1. Describe the structure of the real number system and identify its appropriate applications and limitations.	partial	no, less emphasis on structure 2007	no	A2(8)ab, A1(9)e		2	2,3,4		
2. Explain what complex numbers (real and imaginary) mean and describe some of their many uses.	no					2			
B. COMPUTATION									
Students will understand and demonstrate computation skills. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Use and apply estimation with quantities, measurements, computations, and problem-solving.	yes	yes	no	A,B	yes, but is stated for all grades	3	3		
2. Use multiple strategies in solving problems involving addition and subtraction of whole numbers.	yes	yes	no, but synonymous	A2(2), D1(2)bc	yes	3	2,3,4		
3. Show understanding of addition and subtraction by using a variety of materials, strategies, and symbols.	partial,	no, materials and symbols not specified	no	A2(2)	yes	3	2,3,4 in 2007 explain is added		
ELEMENTARY GRADES 3-4									
1. Solve multi-step, real-life problems using the four operations with whole numbers.	yes	no, multi-step and single step not separate	no	A2(3)b, A3(3)abd, A3(4), A3(5)	no	3	2,3,4		
2. Solve real-life problems involving addition and subtraction of simple fractions.	partial	no, common denominators and intro to multiplication in 2007	no	A4(4)a	span	3	3		

3. Demonstrate and explain the problem-solving process using appropriate tools and technology and defend the reasonableness of results.	not as an indicator					4			
4. Develop proficiency with the facts and algorithms of the four operations on whole numbers using mental math and a variety of materials, strategies, and technologies.	partial	mental, materials and technologies not explicit in 2007	no	A2(3), A3(3), A3(4)	span	3	3		
MIDDLE GRADES 5-8									
1. Compute and model all four operations with whole numbers, fractions, decimals, sets of numbers, and percents, applying the proper order of operations.	yes	yes	no	A2(5), A3(5), A4(5), A5(5)bc, A6(5)c; A3(6), A5(6); A2(7)	span	3,4	3, 4		
2. Create, solve, and justify the solution for multi-step, real-life problems including those with ratio and proportion.	yes	yes	no, real life in the statement of standard, not limited to multi-step in 2007	A2(5), A3(5), A4(5), A5(5)bc, A6(5)c; A3(6), A4(6), A5(6); A2(7), A3(7)bc, A4(7)b	span	3,4, 6	3,4,6		
SECONDARY GRADES									
1. Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.	partial	partial, the 2007 is more specific	no	A1(9)bcd, D5(9)b	yes	3,6	3		
2. Explain operations with number systems other than base ten.	no					2			
C. DATA ANALYSIS AND STATISTICS									
Students will understand and apply concepts of data analysis. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Formulate and solve problems by collecting, arranging, and interpreting data.	yes	yes	no	B2(2), B2(3), B2(4)	no	3, 4	2,3,4		
2. Make tallies and graphs of information gathered from immediate surroundings.	no					3			
ELEMENTARY GRADES 3-4									
1. Make generalizations and draw conclusions using various types of graphs, charts, and tables.	yes	yes (with K1)	no	B2(3), B2(4)	span	4	2,3,4		

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2. Read and interpret displays of data.	yes	yes (with K1)	no	B2(3), B2(4)	span	2, 3	2,3,4		
MIDDLE GRADES 5-8									
1. Organize and analyze data using mean, median, mode, and range.	yes	yes, but quartiles in 2007	no	B4(6), B3(8)	span	3,4	3,4		
2. Assemble data and use matrices to formulate and solve problems.	no					3			
3. Construct inferences and convincing arguments based on data.	no explicit indicator	see "understand"				5			
SECONDARY GRADES									
1. Determine and evaluate the effect of variables on the results of data collection.	no					3,4			
2. Predict and draw conclusions from charts, tables, and graphs that summarize data from practical situations.	yes	yes	no	B1(7), B2(9)b, B3(9)b	no	4	2,3,4		
3. Demonstrate an understanding of concepts of standard deviation and correlation and how they relate to data analysis.	yes	yes	no	B2(9), B3(9)ac	yes	2, 4	2,3,4		
4. Demonstrate an understanding of the idea of random sampling and recognition of its role in statistical claims and designs for data collection.	yes	no, in 2007 application added	no	B(4)9	yes	2	2,3,4		
5. Revise studies to improve their validity (e.g., in terms of better sampling, better controls, or better data analysis techniques).	no					5			
D. PROBABILITY									
Students will understand and apply concepts of probability. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Use concepts of chance and record outcomes of simple events.	no					3			
ELEMENTARY GRADES 3-4									
1. Explain the concept of chance in predicting outcomes.	no					2			
2. Estimate probability from a sample of observed outcomes and simulations.	yes	yes	no	B2(7)b	no	3	3,4		
MIDDLE GRADES 5-8									
1. Find the probability of simple events and make predictions by applying the theories of probability.	yes	yes	no	B2(7)	span	3	2,3,4		
2. Explain the idea that probability can be represented as a fraction between and including zero and one.	yes	yes	no	B2(7)c	span	2	2,3		

3. Use simulations to estimate probabilities.	yes	yes	no	B4(8)b	span	3	2,3,4		
4. Find all possible combinations and arrangements involving a limited number of variables.	yes	similar (used in a context)	no	B4(8)c	span	3	3		
SECONDARY GRADES									
1. Find the probability of compound events and make predictions by applying probability theory.	yes	yes	no	B5(9)	yes	3,4	2,3,4		
2. Create and interpret probability distributions.	yes	yes	no	B5(9)	yes	3	2,3,4		
E. GEOMETRY									
Students will understand and apply concepts from geometry. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Describe, model, and classify 2D shapes and selected 3D figures.	yes	model changed to create	no	C1(2)ab	yes	2,3,4	2,3		
2. Investigate and predict the results of combining, dividing, and changing 2D shapes.	partial	no, investigate, predict changed to create	no	C1(2)c, C1(3)b	no	3	3		
3. Use positional words to describe the relationship of two or more objects (e.g., over, under, beside, to the left).	no					2			
ELEMENTARY GRADES 3-4									
1. Describe, model, and classify shapes and figures using applicable properties.	partial	no, "model" lost in 2007, sketch, identify added	no	C1(3)acd:C1(4)	span	2, 3, 4	2,3,4		
2. Experiment with shapes and figures to make generalizations regarding congruency, symmetry, and similarity.	partial	no experiments, generalizations or similarity	no	C3(4)		4	2,3		
3. Use transformations such as slides, flips, and rotations.	yes	yes	no	C5(5)	no	3	2,3		
4. Use the properties of shapes and figures to describe the physical world.	no indicator					3			
MIDDLE GRADES 5-8									
1. Compare, classify, and draw two dimensional shapes and three dimensional figures.	yes	yes	no	C1(4), C1(5), C1(6),	no	2,3	2,3		
2. Apply geometric properties to represent and solve real-life problems involving regular and irregular shapes.	yes	real life not specified	no	C1(7), C1(8), C2(8), C3(8)		3, 4			

3. Use a coordinate system to define and locate position.	yes	yes	no	C4(5)a,b	span	3	2,3,4		
4. Use the appropriate geometric tools and measurements to draw and construct two and three dimensional figures.	partial	yes	no, use of tools not stated, sketch is used for create in two dimensions	C1(4); C3(5)d; C4(5)c; C1(6)ac, C5(6) C3(7)ab	no	3	3		
SECONDARY GRADES									
1. Draw coordinate representations of geometric figures and their transformations.	no					3			
2. Use inductive and deductive reasoning to explore and determine the properties of and relationships among geometric figures.	yes	yes	no	C1(8), C2(8), C1(9)abc; C2(9)ab	no	3,4,5	3,4,5		
3. Apply trigonometry to problem situations involving triangles and periodic phenomena.	partial	only right in 2007	no	C3(9)	yes	3	3,4		
F. MEASUREMENT									
Students will understand and demonstrate measurement skills. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Estimate and measure length, time, temperature, weight, and capacity.	yes	yes	no	B1(2), C2(2), C1(5)	no	3	3,4		
2. Identify and give the value of different coins.	yes	yes	yes	B1(2)c	yes	1	1		
3. Select standard and non-standard tools for determining length, time, temperature, weight, and capacity, and use them to solve every day problems.	yes	yes	no	B1(2),B1(3), B1(4), B1(5); C2(2)	no	2,3	2,3		
ELEMENTARY GRADES 3-4									
1. Solve and justify solutions to real-life problems involving the measurement of time, length, area, perimeter, weight, temperature, mass, capacity, and volume.	yes	yes	no	B1(3)b, B1(4)b, B1(5)b; C2(2), C2(3), C2(4), C2(5), C3(5)c	no	3,6	3,6		
2. Select measuring tools and units of measurement that are appropriate for what is being measured.	yes	yes	no	B1(3)a, B1(4)a, B1(5)a; C2(2)	no	2	2		
MIDDLE GRADES 5-8									

1. Demonstrate the structure and use of systems of measurement.	partial	emphasis on conversion for structure	no	B1(5), B1(6), B2(8)a	span	3	3,4		
2. Develop and use concepts that can be measured directly, or indirectly (e.g., the concept of rate).	yes	yes	no	B1(8), B2(8)b	span	3,5	2,3,4		
3. Demonstrate an understanding of length, area, volume, and the corresponding units, square units, and cubic units of measure.	yes	yes	no	C2(3), C2(4), C2(5), C4(9)b	no	2,3	2,3,4		
SECONDARY GRADES									
1. Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools.	partial	no, no tool use in 2007	no	B1(9)a	yes	3	2,3,4		
2. Derive and use formulas for area, surface area, and volume of many types of figures.	yes	yes	no	B3(5), B3(6), B4(8), B4(9)	no	3,5	2,3,4		
G. PATTERNS, RELATIONS, FUNCTIONS									
Students will understand that mathematics is the science of patterns, relationships, and functions. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Recognize, describe, extend, copy, and create a wide variety of patterns.	yes	yes	no	D3(2)	yes	2, 3	2,3,4		
2. Explore the use of variables and open sentences to describe relationships.	partial	no explore, variables or relationships in 2007	no	D2(2)	yes	3	2,3,4		
3. Represent and describe both geometric and numeric relationships.	partial	numeric in 2007	no	D1(2)	yes	2,3	2,3,4		
ELEMENTARY GRADES 3-4									
1. Use the patterns of numbers, geometry, and a variety of graphs to solve a problem.	yes	yes	no	D4(3), D3(4), D3(5)	no, graphs in 5	3	3,4		
2. Use variables and open sentences to express relationships.	yes	yes	no	D1(4)	span	3	3		
MIDDLE GRADES 5-8									
1. Describe and represent relationships with tables, graphs, and equations.	yes	no, formulas and diagrams added in 2007	no	D3(5), D3(6), D3(7), D3(8)	span	3	2,3,4		
2. Analyze relationships to explain how a change in one quantity can result in a change in another.	yes	yes	no	D3(6), D3(7), D3(8)	span	4	2,3,4		

3. Use patterns and multiple representations to solve problems.	yes	yes	no, patterns not explicit in 2007, but implicit	D3(5), D3(6), D3(7), D3(8)	span	3	2,3,4		
SECONDARY GRADES									
1. Create a graph to represent a real-life situation and draw inferences from it.	yes	yes	real life not explicit in 2007, but see understand	D4(9), B2(9)b	yes	3,4	2,3,4		
2. Translate and solve a real-life problem using symbolic language.	yes	close	translate not present in 2007, see understand	D4(9)	yes	3	2,3,4		
3. Model phenomena using a variety of functions (linear, quadratic, exponential, trigonometric, etc.).	yes	yes	no	D4(9)	yes	3	2,3,4		
4. Identify a variety of situations explained by the same type of function.	no					2			
H. ALGEBRA CONCEPTS									
Students will understand and apply algebraic concepts. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Make drawings for problem situations and mathematical expressions in which there is an unknown, using a variety of tools and approaches.	no					3			
2. Use language and symbols to express numerical and other relationships.	partial	only numbers and symbols in 2007	no	D1(2)	yes	3	2,3		
ELEMENTARY GRADES 3-4									
1. Develop and evaluate simple formulas in problem-solving contexts.	yes	yes	no	D1(3), D1(4)	span	3	3		
2. Find replacements for variables that make simple number sentences true.	yes	yes	no	D2(3), D2(4)	span	3	3		
MIDDLE GRADES 5-8									

1. Use the concepts of variables and expressions.	yes	yes	no, so broad in M4H1.8 anything could fit here	D1(5), D1(6), D1(7), D1(8)	span	3	3		
2. Solve linear equations using concrete, informal, and formal methods which apply the order of operations.	yes	yes	yes	D2(6), D2(7)a, D2(8)	span	3	3		
3. Analyze tables and graphs to identify properties and relationships in a practical context.	yes	yes	no	D3(5), D3(6), D(3)7,D4(8)	span	4	2,3,4		
4. Use graphs to represent two-variable equations.	yes	yes	no	D4(8)C	span	3	2,3,4		
5. Demonstrate an understanding of inequalities and non-linear equations.	yes	yes	yes	D2(6), D3(8)	span	2	2,3,4		
6. Find solutions for unknown quantities in linear equations and in simple equations and inequalities.	yes	yes	no, nonlinear not until 9-D level	D2(6), D2(7)a, D2(8), D3(8), D(2)9	no	3	2,3,4		
SECONDARY GRADES									
1. Use tables, graphs, and spreadsheets to interpret expressions, equations, and inequalities.	partial	spreadsheets limited	no	D4(9), D5(9)	yes	3	2,3,4		
2. Investigate concepts of variation by using equations, graphs, and data collection.	partial, very close!	data not specified, but tables are	no	D4(9)c	yes	3	2,3,4		
3. Formulate and solve equations and inequalities.	partial	does not say formulate	no	D2(9), D3(9)	yes	3	2,3,4		
4. Analyze and explain situations using symbolic representations.	yes	yes	no	D4(9), D5(9)	yes	4	2,3,4		
I. DISCRETE MATHEMATICS									
Students will understand and apply concepts in discrete mathematics. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Classify sets of objects into two or more groups using their attributes.	no					2			
2. Create and use an organized list to determine possible outcomes or solve problems.	no					3			
ELEMENTARY GRADES 3-4									
1. Create and use organized lists, tree diagrams, Venn diagrams, and networks.	no					3			
2. Give examples of infinite and finite solutions.	no					2			

MIDDLE GRADES 5-8									
1. Create and use networks to explain practical situations or solve problems.	no					3			
2. Identify patterns in the world and express these patterns with rules.	yes	yes	no	D1(5), D1(6), D1(7)	span	3	3		
SECONDARY GRADES									
1. Use linear programming to find optimal solutions to a system.	partial	partial, systems of linear equations	no	D2(9)a	yes	3	3		
2. Use networks to find solutions to problems.	no					3			
3. Apply strategies from game theory to problem-solving situations.	no					3			
4. Use matrices as tools to interpret and solve problems.	no					3			
J. MATHEMATICAL REASONING									
Students will understand and apply concepts of mathematical reasoning. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Describe a simple argument's strengths and weaknesses.	no indicator	see "understand"				4			
2. Distinguish between "important" and "unimportant" mathematical information.	no indicator	see "understand"				2			
ELEMENTARY GRADES 3-4									
1. Demonstrate an understanding that support for a claim should be based on evidence of various types (e.g., from logical processes, from measurement, or from observation and experimentation).	no indicator					2			
MIDDLE GRADES 5-8									
1. Support reasoning by using models, known facts, properties, and relationships.	no indicator explicit	see "understand"				4, 5			
2. Demonstrate that multiple paths to a conclusion may exist.	no					3			
SECONDARY GRADES									
1. Analyze situations where more than one logical conclusion can be drawn from data presented.	no					4			

K. MATHEMATICAL COMMUNICATION									
Students will reflect upon and clarify their understanding of mathematical ideas and relationships. Students will be able to:									
ELEMENTARY GRADES Pre-K-2									
1. Use numerals and symbols (>, <, =, +, -) to report numerical data and relationships.	no					2			
ELEMENTARY GRADES 3-4									
1. Use simple tables and graphs to communicate ideas and information in presentations in a concise and clear manner.	yes	yes	no	B2(3), B3(3); B2(4)	span	3	2,3,4		
MIDDLE GRADES 5-8									
1. Translate relationships into algebraic notation.	yes	yes	no	D1(5), D1(6), D1(7), D3(5), D3(6), D3(7), D3(8)	span	3	2,3,4		
2. Use statistics, tables, and graphs to communicate ideas and information in convincing presentations and analyze presentations of others for bias or deceptive presentation.	yes, except for bias and deceptive	no	no	B2(5), B3(5), B3(6), B4(6), B1(7), B3(8)	span	3,4,5,6	2,3,4		
SECONDARY GRADES									
1. Restate, create, and use definitions in mathematics to express understanding, classify figures, and determine the truth of a proposition or argument.	no indicator	see "understand"				2,3,4,5			
2. Read mathematical presentations of topics within the Learning Results with understanding.	no indicator	see introduction				2			
Standards, Pls, Descriptors NOT found in 1997 document									
A1(3) use words for numbers									
A1(4)d round to 100									
A1(5)b round to place value appropriate for given contexts									
A1(9)a. Use the concept of nth root.									
A5(4) Round decimals									
B1(9) b. Know how to represent an approximate measurement using significant figures.									
B1(9)c. Know that most measurements are approximations and understand why it is useful to take the mean of repeated measurements.									
B3(8)quartiles									

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B3(9)a quartiles, mean absolute deviation,									
B3(9)b - interpret, give examples of and describe key differences between different types of distributions: uniform, normal and skewed									
B3(9)c For the sample mean of normal distributions, use the standard deviation for a group to establish 90%, 95% and 99% confidence intervals.									
C4(6) Understand and use reflections, rotations, and translations to define and identify congruent plane figures.									
C4(6)a. Apply the understanding that if a plane figure can be laid on top of another plane figure by rotations, translations or reflections then the figures are congruent.									
C5(6) Know how to use proportional relationships to make indirect linear measurements and use scale drawings to make linear measurements.									
D1(9) Understand and use, polynomials, and expressions with rational exponents.									
D1(9)a. Simplify expressions with rational exponents.									
D1(9)d divide polynomials by $ax + b$									
D3(3)b. Be able to show that for whole numbers subtraction and division are not commutative and show that multiplication and addition are commutative.									
D5(9) students express relationships recursively and use iterative methods to solve problems									
D5(9)a express the $(n+1)$ st term in terms of the n th term etc.									
D5(9)b use technology to perform repeated calculations to develop solutions, etc. (weak match to old secondary B1)									
% increase or decrease # of Standards	(-7), -63%								
11-7=4									
% increase or decrease # of Performance Indicators	0								
117-109 = 8	-8, -7% (but includes separate grades 3-8 instead of 2 spans)								